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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/238,851	01/27/1999	DARRYL W. PETERS	5545	5768

7590 01/16/2003

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EXAMINER

WEBB, GREGORY E

ART UNIT	PAPER NUMBER
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1751

12

DATE MAILED: 01/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/238,851

Applicant(s)

PETERS ET AL.

Examiner

Gregory E. Webb

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1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Prosecution Application***

The request filed on 5-31-01 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/238,851 is acceptable and a CPA has been established. An action on the CPA follows.

### ***Claim Rejections - 35 USC § 102/103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, 5, 8, 10-12, 14-19, are rejected under 35 U.S.C. 102(b) as being anticipated by Torii et al (US 5,972,862).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al as recited above and further in view of Small et al (US 6,117,783).

Claims 1-17 remain rejected under 35 USC 103(a) as being unpatentable over Torii et al in view of Ward et al (US 5,571,447) as described in the paper dated Nov-21, 2000.

Both Torii et al and Small et al teach solutions for removing contaminants from the surface of semiconductors. Both Torii and Small are concerned with damage that can occur to the metal layers on the surface of the semiconductor substrate. Both references discuss the problem of metal oxidation and the use of corrosion inhibitors to protect these metals. Both references are also concerned with chelating any metals that end up oxidized and in solution. It is clear from both references that metal corrosion and chelation are very important in processing of a semiconductor surface. Torii et al however fails to teach the specific corrosion inhibitors of claim 18.

Although Torrii does not teach the corrosion inhibitors of claim 18, Small teaches the benefits of using gallic acid and catechol. Small states that the use of such compounds will not only prevent corrosion but will also chelate mobile ions (see col. 8, lines 30-65). Therefore, as one skilled in the art of semiconductor process would be well aware of the problems of corrosion and chelation, such a person would obviously seek out chelating and corrosion inhibitors to solve this problem. In doing so such a person would find the teachings of Small render obvious the use of such compounds in a semiconductor processing solution. Therefore the use of these well-known compounds to solve two well-known problems in semiconductor processing would have been obvious to one skilled in semiconductor processing.

Concerning claim 19, Torii teaches the use of ammonium fluoride and acetic acid. Such a combination of salt with an organic acid would form an equilibrium concentration between ammonium acetate and hydrogen fluoride. Thus the formation of ammonium acetate would meet the limitation of claim 19. Furthermore, Torii teaches the use of components D', an organic carboxylic acid ammonium salt. In particular, this D' component can be ammonium acetate (see col. 7, line 22-32). Noting that the addition of these salts in combination with the strong acid, i.e. hydrofluoric acid, would again buffer the solution and meet the limitation of claim 1.

Concerning the use temperature of claims 15-17, Torii teaches the use temperature to be between 10-60°C (see col. 10).

***Allowable Subject Matter***

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Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to teach or suggest the inclusion of an ammonium salt of a phosphoric acid in a solution containing an acidic buffer solution, a polar organic solvent, a fluoride, water, wherein the pH is between about 3 to about 6 and is free of glycols.

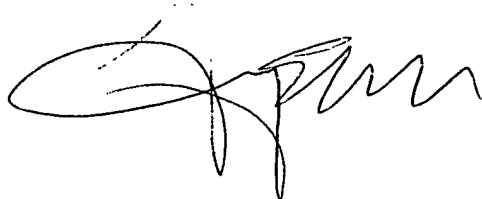
***Conclusion***

The applicant's amendment submitted 5-31-01 provides no new arguments and only adds new claims. As such, the examiner maintains those arguments presented in the previous final rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 703-305-4945. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 703-308-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

A handwritten signature in black ink, appearing to read 'Gregory E. Webb', is written over a horizontal line.

Gregory E. Webb  
Primary Examiner  
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